





# THIEVING MAGPIE Using on-board GSM/GPRS services to track targets



## On board GSM Services



- Many airlines are offering on-board mobile phone services, particularly for long haul and business class (list is growing)
- At least British Airways are restricting the service to data and SMS only no voice

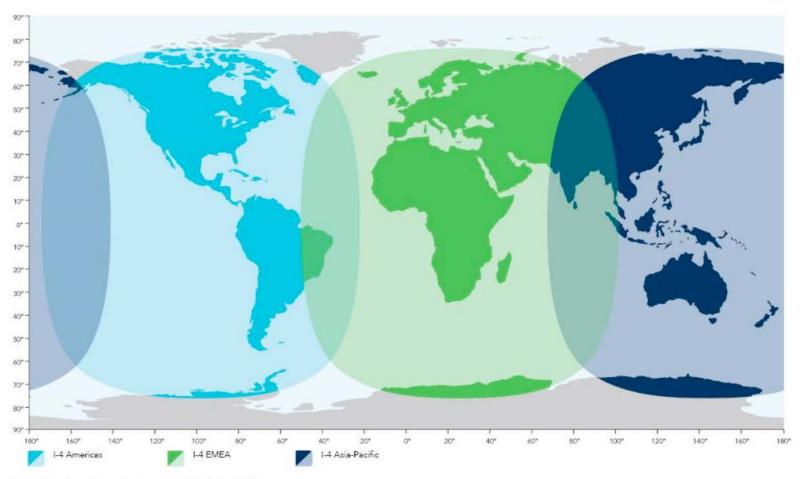




### Access

- Comms are 'backhauled' to global networks via Inmarsat BGAN satellite terminals
- If flight is in Inmarsat's Europe, Middle East or Africa (EMEA) region we should have complete access (including content) via Project SOUTHWINDS
- Global coverage via SOUTHWINDS is planned in the next year, fvey straps

#### **BGAN** coverage post satellite repositioning



This map depicts Inmarran's expectations of coverage post repositioning of its I-4 satellites. This map does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending on various conditions.

inmarsat.com/coverage



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#### Air France will begin commercial trials of mobile telephony on its A318 Picocell/onboard channel selector 2 GSM server This airborne system provides the radio interface to mobile phones in the cabin, isolating them from terrestrial phone networks. Manages communications (phone calls, SMS, etc.) centrally, connecting to the ground infrastructure via an air-to-ground link. **GSM Control Panel** · On/off · Tap don't talk mode (period 1) • Tap & talk mode (period 2) · On/Off Local operators 3 Modem Manages the data link between aircraft and telecommunications satellite. Cruising Take-off/ landing

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## **GSM Services**

- Provided by two main providers, OnAir and Aeromobile (only access to OnAir at present)
- Offer voice, SMS and data (when above 10,000 ft)
- Mostly on newer aircraft, but is being from







## Airlines (Current and Planned)







#### OnAir

- BA
- Egypt Air
- Oman Air
- Royal Jordanian
- TAP Portugal
- Wataniya Airways (Kuwait)
- Libyan Airlines
- Air Asia
- TAM Airlines (Brazil)
- Hong Kong Airlines
- Singapore Airways
- Afriqiyah Airways
- Aeroflot
- Oatar Airlines
- Etihad
- Sharjah Ruler's Flight

- Aeromobile (Telenor)
- Emirates
- Malaysian Airlines
- Virgin Atlantic
- Air New Zealand
- Turkish Airlines
- Cathay Pacific
- Lufthansa
- Malaysia
- Qantas
- V Australia
- DragonAir





## **Tracking Targets**

- If a targets phone is switched on, it will attempt to register to its home network that it using the OnAir service even if they don't actually make/receive a call
- Registration requests can be combined with the flight number/callsign of the aircraft
- Available in near real time (approximately 10 minute delay)
- Additional & unique Geolocation events





### Cell-IDs

- Each aircraft has at a dedicated GSM LAC with up to three Pico cells
- Usually Cell-IDs begin 901-15, but Aeroflot use MNC 32 (Megafon) instead (presumably for legal intercept)
- GSM reference data can be enriched with Airline name, but not location



## Event details



GSM events											
Refresh Export	Columns TDS	Create KR Rule	Events 1 - 82 v	Soi	GAX Instrument	estamp )esc		✓ Asc Geolog	Seed Numbers (1 All Numbers (1672)	672) MUSTAN	<b>6</b>
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Network	Location Status	MSC	VLR	MCC	MNC	LAC	Cell ID	CGI	LAI	Cell Description	
OnAir	Confirmed	8829800202 (I)	8829800202 (I)	<u>901</u>	<u>15</u>	4090	9001	901:15:4090:9001	901:15:4090	Etihad Airways	
OnAir	Confirmed	8829800202 (I)	8829800202 (I)	901	<u>15</u>	<u>4090</u>	9001	901:15:4090:9001	901:15:4090	Etihad Airways	
OnAir	Assumed	8829800202 (I)	8829800202	901	<u>15</u>		1	901:15::	901:15:		
OnAir	Unknown	8829800202	8829800202 (I)	<u>901</u>	<u>15</u>			901:15::	901:15:		
OnAir	Unknown	8829800202	8829800202 (I)	901	<u>15</u>			901:15::	901:15:		
OnAir	Unknown	8829800202	8829800202 (I)	901	<u>15</u>			901:15::	901:15:		
OnAir	Unknown	8829800202	8829800202 (I)	<u>901</u>	<u>15</u>			901:15::	901:15:		
OnAir	Assumed	8829800202	8829800202 (I)	901	<u>15</u>			901:15::	901:15:		- 5
OnAir	Confirmed	8829800202 (I)	8829800202 (I)	901	<u>15</u>	<u>4090</u>	9102	901:15:4090:9102	901:15:4090	Etihad Airways	
OnAir	Confirmed	8829800202 (I)	8829800202 (I)	901	<u>15</u>	<u>4090</u>	9102	901:15:4090:9102	901:15:4090	Etihad Airways	
OnAir	Confirmed	8829800202 (I)	8829800202 (I)	901	15	4090	9102	901:15:4090:9102	901:15:4090	Etihad Airways	
OnAir	Confirmed	8829800202 (I)	8829800202 (I)	901	<u>15</u>	4090	9102	901:15:4090:9102	901:15:4090	Etihad Airways	~
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## **Event Details**



User A role	User A type	User A	User A ram value	User	A ay name	User	B role	User B type	e	User B	User B raw value	User B display name
Fri, 23 Mar 2012 13:56:22 GMT — telephony event (abis) unknown call, 2 selectors, duration: 00:00:00 Active user:												
Unknown	imei			5	Unknown		not_avai	lable	not_av	ailable		
Unknown	imsi	•			Unknown		not_avail	lable	not_av	ailable		
Locators:												
Source Cell-Global-Identifier												
Source Flight-I	Number	ETD8271										
Event & Interco		Marking:										
<b>●</b> More												





## **GPRS** Events

- Currently able to produce events for at least Blackberry phones in flight
- Able to identify Blackberry PIN and associated Email addresses
- Tasked content into datastores, unselected to Xkeyscore, further details of usage available





## In-flight data

- Data usage is largely as expected, with a couple of exceptions
  - Webmail
  - Social Networking (Facebook, Twitter etc)
  - 'Travel apps' Google Maps, Currency converters
  - Media
  - VOIP
  - Bitorrent





## Travel Tracking

- We can confirm that targets selectors are on board specific flights in near real time, enabling surveillance or arrest teams to be put in place in advance
- If they use data, we can also recover email address's, Facebook Ids, Skype addresses etc
- Specific aircraft can be tracked approximately every 2 minutes whilst in flight





## ANY QUESTIONS?